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Comparative analysis of Iranian medical academic libraries websites th base Google SEO component

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ABSTRACT

Purpose: The main purpose of this study was to mpa he websites of I n medical academic libraries from the perspective of SEO components or visibility in Google addition to identifying the differences between SEO rules in the two general search engines of Google and Wats Smart.

Design/methodology/approach: The p nt s dy is of a practi study with webometric method and a cross-sectional descriptive-analytical ap ach. To achieve the purpose of this article, first a researcher-made checklist or checklist derived from the mmon compone s of Google SEO agreed between the two tools "SEO Site Check-up" and "SEO p timer" wer esigned, then me bers of the research sample were reviewed and compared based on the said checklist (analy l survey). Othe components of Google SEO were obtained by documentation method (without online SEO a sis tools), the research sample was compared according to them too, (Descriptive survey)

Findings: Iranian me al ac is libraries often are under-visited and under-used because few libraries are sufficiently active and rategic engine optimization. Library administrators can achieve worth information about their org za s via a good managed SEO program that ensures websites and digital object metada mprehen e and usable by search engine crawlers.

Orig ity: Mo of the ex ng studies on SEO have been confined to popular literature, outside of scholarly a emic rese h in librar nd information science. Also, few studies have been done on library SEO in Iran, t this stud d analysis of Iranian Medical Academic libraries website from the perspective of com-po s ecting Google SEO.

Introduction

The practices involve n information access, ailability, acquisition, and use have ev d since t appearance of open web information retrieval systems search gines. In today's world, the website is one of the main tools fo ng inform on of any organization and its special pl nform n and a ertising in all scientific disciplines has en ide ified an xp ed. Scientific and research institutes ve also de gned websi to introduce and offer activities and service special d valuable information in the web environment. ion, as an intermediary between institutions and users, increases the eraction between the two. If a website is designed to provide easier, e accurate and faster access to the information needed by the user d to be able to interact more appropriately with the user, it will increase its use and its ability to meet the user's needs and satisfaction.

The purpose of academic libraries is to support the research needs of education, research and service sections in universities totally, but in medical science, this issue is more in-depth and important, because researchers and students in this field need more up-to-date and accurate information than other scientific fields. With the proliferation of computer networks and the Internet and the advent of the World Wide Web, academic libraries are also using these tools to perform their tasks optimally and achieve their goals.

On the other hand, academic libraries and especially medical academic libraries need communication networks through which they can provide annual reports, brochures, newsletters, databases, etc. to faculty members. In the last decade, library websites have been by far the most important communication network through which they provide information about services, website location, opening hours, services and online information resources such as full-text journal databases, reference services, virtual services, etc.

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The best way for library audiences to share their resources and products is to use websites. Currently, library websites are a good tool for publishing the goals of each library and each library is expected to be able to properly present its resources and services through in its website (Karimi & Soleimani, 2012).

The use of artificial intelligence in web search engines is increasingly advancing. For example, the Rank Brain algorithm is one of the information retrieval and ranking algorithms of Google, which has been operating since 2015 and is based on some kind of artificial intelligence (Davies, 2020). "SEO is one of the current techniques used in digital marketing" (Bala & Verma, 2018).

Search Engine Optimization abbreviated as SEO, is a practical technique that leads to an increase in the quantity and quality of users 'visits to a certain website through users' natural search in search engine results (*What is SEO?,* n.d.). SEO is one of the digital marketing techniques that helps to increase the availability of the web environment (Setiawan et al., 2020).

When a user searches for a particular item in a search engine, some websites appear earlier or higher in the list of retrieved search results, which means that they were more important for that search engine. (Ghobadi Saki, 2016).

The most related questions that becoming apparent from the centrality of the role of search engines in information browsing and retrieval is whether medical academic libraries should entirely accept SEO practices in order to attract more users?

The full adoption of SEO goes beyond a pure growth in the accessibility of libraries on the web to ensure that libraries' digital contents are made available easily to users through open web search engines. If such contents rank high on Search Engine Results Pages, this become achievable (Onaifo & Rasmussen Pennington, 2013).

The role of search engines such as Google, in information seeki[ng] retrieval is so important that some experts like Bell believed that th[e] rise of open web search engines, such as Google, heralded the pass ou[t] of libraries (Bell, 2004). Contrary to the some experts such as Bell, ot[her] experts have believed that libraries should know mor[e a]bout Google an[d] optimize its results, So they give reasons in supp[ort] of this i[dea] that library staff need to develop more knowledge [of] SEO and i[ts i]mpact on Search Engine Results Pages in order to a[ssist] users t[o] become [a]n inform about the permeation of the phen[o]menon on [s]ch engine result listings (Cahill & Chalut, 2009) also[,] some others beli[e]d that library staff with the responsibility of pr[o]viding information lit[e]racy need to assist online information seekers in evalu[a]ting the results on Search Engine Results Pages, but i[f] they learn mor[e a]bout SEO, can do so effectively (Grimmelman[n], 2010).

So, the main purp[ose] of this s[tu]dy was to compare the website of Iranian medical acad[e]mic libra[ri]es from the perspective of SEO components or visibility in G[oo]gle. In addition[,] identifying the differences between SEO [in] the tw[o] general s[ea]rch engines Google and Watson Smart.

Resear[ch] questi[ons]

- What is t[he] final rank or score of the Iranian medical academic Libraries webs[ites] based on SEO components?
- What compone[nts] influence Google SEO according to online SEO websites analyzing tools?

Background

According to a study by Onaifo and Rasmussen Pennington (2013), Toronto public libraries are rated poorly in terms of search engine optimization. This research has been done with the aim of improving the SEO content of libraries and has adjusted and presented its data based on SERPs, while the present study has examined the websites of medical science libraries based on components of two automated SEO tools. Therefore, it has more extensibility.

In an article entitled "SEO for Libraries", O'Brien et al. (2014) proposed ways to increase the visibility of search engine libraries and implemented these methods successfully for the University of Montana Library website. Askey and Arlitsch (2014) have identified the use of the HTTPS instead of HTTP as one of the factors influencing SEO in the Google search engine, and have stated that libraries should consider this too in order to grow the visibility of their home pages in retrieved results of Google search engine. This article only examined one of the components of SEO promotion and did not include the other SEO components on improving Google rankings.

Dickinson and Smit (2015) have also stated that Canadian public libraries have low visibility in search engi[nes. The] paper described a small, preliminary pilot study. Therefore[, the] had not h[igh] extensibility. Scott (2015) in an article entitled "Wh[ite] Hat SEO: Struct[ure]d Web Data for Libraries" teaches how to add struct[ure]d data to the li[bra]ry website so that search engines can more [eas]ily refer [vis]itors to Lib[ra]ry locations, clocks and contact informati[on].

Gennaro (2015), in an [ar]ticle entit[le]d " Brev[ity] and Clarity: Titles, Keywords, and Search En[gine] Optim[iz]ation," points out that while in the world of printed boo[ks] the a[uthor] using unfa[mi]liar titles for their book, was not a big pr[ob]lem, in toda[y's] digital w[or]ld, using the right title to search for the [con]tent and using rele[van]t k[ey]words throughout the text is very impor[tan]t bec[au]se it will increa[se] the potential to be viewed and indexed in search engi[nes]. This article only examined one of the compone[nts] SEO promotio[n] keywords.

[K]aur, Kaur, and Kaur (201[7]) evaluated the performance of university w[e]bsites with the help of automated performance measurement and SEO t[oo]ls such as Pi[n]dom, GTMetrix, Website Grader and Site Speed C[he]cker Tool. This [ar]ticle did not specifically address SEO and examined a s[e]t of factors t[ha]t could improve the quality and speed of websites.

A s[tu]dy Lee et al. (2016) on the LG Sangnam digital library in Korea in terms of 10 SEO components showed that "SEO techniques [in]cr[ease] the number of users and helps to expose the library services through search engines". This article only covered 10 SEO components just for a library (LG Sangnam). Ale Ebrahim (2016) has considered the use of SEO techniques in increasing the visibility of an article. Therefore, its findings point to increase citation to articles in scientific search engines and use less of the overall components of SEO improvement.

Marks and Le (2017) have stated that factors such as "sharing the text of an article in multiple places", "converting the text of an article from PDF that cannot be read or is not indexed in search engines, to PDF that can be read on search engines ", "Use of appropriate titles, abstracts and metadata", will lead to SEO promotion and article views. In his book Innovative Strategies in Marketing Information Services.

Krabaj, Baxhaku, and Sadrijaj (2017) have examined an educational website terms of internal and external SEO techniques and the role of these techniques in increasing the website's ranking in search engines. In an article by Arlitsch (2017), methods are provided to increase the visibility of libraries in Google.

Saha and Paul (2018), stated that in order to make their article more visible, in addition to mastering topics such as a variety of economic models of free access, such as green or gold free access, researchers should also be familiar with SEO or search engine optimization techniques. Danaei (2018), in his master's thesis, examined 10 Iranian academic libraries in terms of their page optimization according to Google engine standards using two methods: 1) interviewing faculty members and 2) searching for their website URL in Google search engine, and concluded that "SEO and visibility of Iranian Academic Libraries are weak." But she has not paid much attention to how this problem can be solved.

In a study by Kohzadi Seifabad and Shayganfard (2019), 38 components of were named as effective components of SEO and the effect of each component was examined on the webometric ranking of 75 medical university websites in Iran and abroad. They concluded that if university websites adhered to the SEO component, they would achieve a higher webometric ranking. This was the closest research to the

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current research, but in this research, the SEO component checklist was not explicitly mentioned and the main components were not specified.

Waral (2020) discusses the use of blogs, social media, and other promotional materials by academic libraries to expand library services and increase the number of users. On the other hand, according to the Google SEO Guide (Retrieved 2020), connecting a website to social media is one of the effective components in SEO promotion.

According to the research of Husain et al. (2020), there is a direct relationship between the number of website visitors and website SEO, so the number of clicks or visits of users is one of the components affecting SEO. And the closest research to the present study in Iran is Tavusi dissertation in 2020, which was conducted in the field of SEO of academic library websites of the Ministry of Science, and SEO evaluated 42 websites of academic libraries, it also examines the similarities and differences between results of searching "academic library" keyword in 2 search engine: Watson and Google, that showed between two search engines, Google and Watson, 3 similarities, 4 differences, 9 features for Watson and 42 features for Google is identified.

Most previous researches have pointed to limited number of SEO components of library sites, while this research, in addition to providing a checklist of SEO components, also examined the websites of Iranian medical academic libraries and offered solutions.

Most of the existing studies on SEO have been confined to popular literature, outside of scholarly academic research in library and information science. Also, few studies have been done on library SEO in Iran, especially in University of Medical Science, So, this study compared analysis of Iranian Medical Academic libraries website from the perspective of components affecting Google SEO.

Methodology

The present study is of a practical study with webometric method and a cross-sectional descriptive-analytical approach (The website of medical academic libraries have been analyzed and compared by this research extracted checklist).To achieve the purpose of this article first a researcher-made checklist or checklist derived from the common components of Google SEO agreed between two tools "SEO Site Check-up" and "SEO Ptimer" were designed, then members of research sample were reviewed and compared based on the said checklist (analytical survey). Other components of Google SEO were obtained by documentation method (with the online SEO analysis tools), and the research sample was compared according to them too (Descriptive survey).

So, totally, whole process of this research has been done in three stages, which are fully covered in the findings:

1. We obtained the common SEO components between the two automated tools, "SEO Check-up" and "SEO P timer".

2. By studying various texts, we also extracted other related components to SEO.

And 3. We have compared the websites of medical university libraries with the components from 2 previous stages.

With the help of two analytical tools "AHRF" and "SEO Ptimer", the websites were compared with the prepared checklists. For this aim, the sample web addresses were placed in the search box of the "SEO PTimer" tool, and 28 components out of a total of 30 components of the checklist were analyzed. Then, the web addresses of the members of the research community were placed in the search box of the analytical tool "AHRF" and which provided analysis and evaluation for 1 other component of the checklist. The remaining 1 component was unmeasurable and no tools were found to measure it (probably because the component requires human resource analysis or intelligence).

Other components of SEO, regardless of online SEO analysis tools, were identified as based on previous researches or Google SEO guide page, and if there were new components that were not already on the checklist, members of the research sample were compared in that regard too. The data related to this part of the research, were collected in a descriptive survey with the method of direct and with the help of three analytical tools: "W3C" Google search engine and "Similar Web".

The sample (statistics) included all research population, the 22 websites of the central libraries of Iranian Medical universities affiliated to the Ministry of Health and Medical Education, which were located geographically in Tehran and other metropolitan cities of Iran, which were identified through the two websites of the Ministry of Health and Medical Education and the Ministry of Interior of Iran, that showed in Table 1. There are a total of 68 universities of medical sciences in the centers of the provinces of Iran, of which 22 had websites that could be examined in terms of SEO, and therefore the sample of this research are the same 22 websites.

Data collection tools in this study are:

A: SEO researcher-made checklist consisting of 30 components found using the agreements between the two automated analysis tools "SEO P timer" and "SEO site check-up".

B: Similar web online analytics tool.

C: SEO P Timer online SEO Tool.

D: "AHRF" analytical tool.

E: W3 Consortium Website.

F: Google search engine the validity of the researcher-made checklist was assessed by criterion validity of agreement type or concurrent validity through an agreement between two online SEO analysis tools. Also, the content validity of the mentioned list was confirmed according to the opinion of eight SEO experts and their confirmation that the thirty components of the researcher-made checklist are among the most important and main components of SEO.

The reliability of the researcher-made checklist tool was measured with the Holsti formula in such a way that the reliability coefficient or agreement coefficient between the two automated SEO analysis tools "SEO Site Check-up" and "SEO ptimer" was 0.77, which is higher than 0.7 cutoff and therefore, desirable. Other tools used, including similar Web 2 Consortium, SEO site checkup and SEO P-Timer, are world-renowned tools.

All data used in the present study, is gathered in the first six months of the year 2020, statistical analysis was performed with "P Spire" software, which is similar to "SPSS", and descriptive analysis or drawing charts was conducted with "Labor Office Calc" software, which is similar

Table 1
Websites of the central libraries of Iranian Medical universities

No	Website address	Title of University of medical science
1	https://centlib.abadanums.ac.ir/	Abadan University of Medical Science
2	https://centlib.umsu.ac.ir/	Urmia University of Medical Science
3	https://centlib.mui.ac.ir/	Isfahan University of Medical Science
4	http://centlib.iums.ac.ir/	Iran University of Medical Science
5	https://centlibrary.tbzmed.ac.ir/	Tabriz University of Medical Science
6	http://lib.tums.ac.ir/	Tehran University of Medical Science
7	https://centlib.arakmu.ac.ir/fa	Arak University of Medical Science
8	http://centlib.nkums.ac.ir/	North Khorasan University of Medical Science
9	http://centlib.zaums.ac.ir/	Zahedan University of Medical Science
10	http://centlib.sbmu.ac.ir/	Shahid Beheshti University of Medical Science
11	https://centlib.sums.ac.ir/	Shiraz University of Medical Science
12	http://centlib.lums.ac.ir/	Lorestan University of Medical Science
13	https://centlib.mazums.ac.ir/	Mazandaran University of Medical Science
14	https://centlib.mums.ac.ir/	Mashhad University of Medical Science
15	http://centlib.yums.ac.ir/	Yasuj University of Medical Science
16	http://centlib.hums.ac.ir/	Hormozgan University of Medical Science
17	http://centlib.kmu.ac.ir/fa	Kerman University of Medical Science
18	https://centlib.bpums.ac.ir/	Bushehr University of Medical Science
19	http://centlib.qums.ac.ir/	Qazvin University of Medical Science
20	http://centlib.goums.ac.ir/	Golestan University of Medical Science
21	https://centlib.kums.ac.ir/	Kermanshah University of Medical Science
22	http://centlib.umsha.ac.ir/	Hamedan University of Medical Science

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to “Excel.

Results

First, four SEO analysis tools, including “Rank Jan”, “Woo Rank”, “SEO P Timer”, “SEO Site Check-Up”, were selected for their better accessibility in Iran, and the components of SEO, were determined based on these 4 online tools. The mentioned SEO analysis was carried out and the results in Table 2 were obtained. These tools operate with the input of the website’s address and then analyze the content of that website in terms of quality components of SEO. As shown in Table 2 the two online tools “SEO site check-up” and “SEO P timer” covered a larger number of SEO components and thus were selected to design the researcher-made checklist of SEO components.

30 components were found (Table 3) to be common between the two tools, and so a researcher-made checklist of the SEO components was developed. Then, the reliability coefficient of the checklist was calculated with the Holstein formula 0.77 (formula, taken from Wang, 2011) which was higher than 0.70 (77/60) and desirable (Faraji, 2019,183).

Of the 30 final components extracted, 28 components were measurable for the researcher free of charge, 2 components “number of web citations” and “correct use of follow and non-follow tags” were unmeasurable (The explanation of the reason for not being measurable is given below) . That the results shown at Table 3.

A careful look at the SEO checklist, indicates that components 1 to 29 are components that can be observed by library webmasters. But component 30, the number of web citations that other websites make to the library website, is beyond the reach of library website administrators, meaning that this component cannot be covered or observed within the content of the library website, but rather can be measured from the reactions of other websites.

Therefore, it can be said that the components affecting SEO are divided into two groups. Information that can be gathered by the website administrators and information that should be obtained from other websites. A total of 22 websites of the central medical academic libraries were identified and then ran through. SEO analysis tool “SEO P timer” to be analyzed on the basis of components 1 to 29 listed in Table 4, which are components that managers are able to observe. This data collected from 10 to 20th of October 2020. Component no.29 was analyzed a little with this tool and the quality was not considered, since quality assessment required human intelligence for analysis.

Component 30 can potentially be analyzed by SEO ptimer tool (because it is 100% quantitative) however, it was not available free, so out of the total of 30 components listed in Table 3, only 28 components of SEO, ie components 1 to 28 listed in Table 4,were analyzed for the research population, The 22 websites of the Iranian medical academic Library affiliated to Ministry of Health and Medical Education were reviewed and analyzed and Fig. 1 and Table 3 were obtained.

Component 30 of the number of backlinks or web citations in the research-made checklist, which cannot be observed by administrators, was measured and analyzed for free with part of the “AHRF” tool, and thus, Fig. 2 and Table 5 were obtained. It is worth mentioning that due to the dynamics of web content, the researcher tried to extract the data of Fig. 2 and Table with the “AHRF” tool in a continuous period of time, ie Oct 10 and 20, 2020. Fig. 2 show the websites of Iranian medical

Table 2
The number of components and concepts of SEO from the perspective of 4 Google SEO automated analysis tools

Number of components affecting SEO	Number of concepts affecting SEO	Website automation tool name
14 components	10 Concepts	Woo rank
21 components	8 Concepts	Jen rank
45 components	5 Concepts	SEO Checkup
32 components	9 Concepts	SEO P Timer

Table 3
Researcher checklist of components affecting SEO derived from the agreement between the two automated SEO analysis tools “SEOptimer” and “SEO site check-up”

No	Identified common components effective in SEO promotion between the two tools “SEO timer” and “SEO site check-up”
1	Use a “title” tag or metadata
2	Use a “description” tag or metadata
3	Use tags or “attribute” metadata for image files
4	Use of title tags of the main title (H1, H2 and… … H6)
5	Proper coherence between main text and keywords
6	Use robots.txt on the site
7	Having a “sitemap” (website) which is an XML
8	Using site visitor analysis tools such as Google Analytics
9	Use of structured data and information in the content of the website using the schema tool
10	Connecting websites to social media such as Instagram, Twitter, Facebook, etc.
11	Equipping the website with a dedicated icon
12	Do not use files with Flash content in the content of the website
13	No “JavaScript error” in website programming
14	Absence of “broken links” and incorrect content in the website
15	Do not use the No Index for the content of the website
16	Low website load time for users (high compression loading speed for users)
17	Low and optimal volume of code on each page of the website
18	Do not use frames in the content of the website
19	Website is equipped with “digital security certificate”
20	Lack of email in the content of the website in the form of “plain text” that is open to hackers penetrating the website.
21	Failure to report various pages of the website as malicious or spammy content
22	Use appropriate links (web citations) that also follow SEO in the content of the website
23	Optimization of images used in the website in terms of volume and loading speed, etc
24	Do not use outdated or old Inline CSS style programming method
25	Use proprietary G zip compression code for the website to compress the content
26	Website responsiveness for mobile devices in addition to desktops
27	Optimization of Java code and CSS code in website content
28	Do not use obsolete HTML codes…
29	Correct use of follow and no follow tags
30	High number of web citations or backlinks from other sites to the website

*An impression from M. Tavusi, 2020

Table 4
Compliance with 28 components of Google SEO which are accessible to administrator in 22 Iranian Medical academic Library websites according to SEO P Timer, Oct 10–20,2020

No	Title of university of medical science	The number of SEO components
1	Tehran University of Medical Science	20.2
2	Iran University of Medical Science	20
3	Shahid Beheshti University of Medical Science	19.8
4	Isfahan University of Medical Science	19.5
5	Golestan University of Medical Science	19.4
6	Kerman University of Medical Science	19
7	Shiraz University of Medical Science	18.7
8	Tabriz University of Medical Science	18.5
9	Urmia University of Medical Science	18
10	North Khorasan University of Medical Science	17.1
11	Kermanshah University of Medical Science	16.6
12	Arak University of Medical Science	16.5
13	Zahedan University of Medical Science	16.2
14	Qazvin University of Medical Science	16
15	Bushehr University of Medical Science	15.9
16	Lorestan University of Medical Science	15.4
17	Yasuj University of Medical Science	15
18	Mashhad University of Medical Science	14.8
19	Mazandaran University of Medical Science	14.7
20	Abadan University of Medical Science	14.2
21	Hamedan University of Medical Science	14.1
22	Hormuzgan University of Medical Science	14

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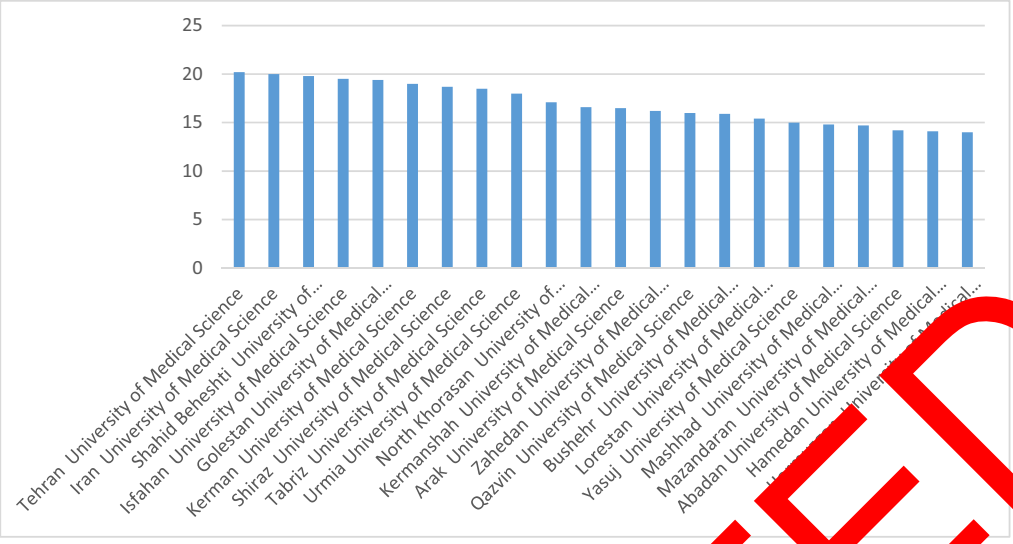

Fig. 1. Best ranking Iranian Medical academic library based on SEO components accessible to administrators according to SEO Timer, Oct 10–20,2020.

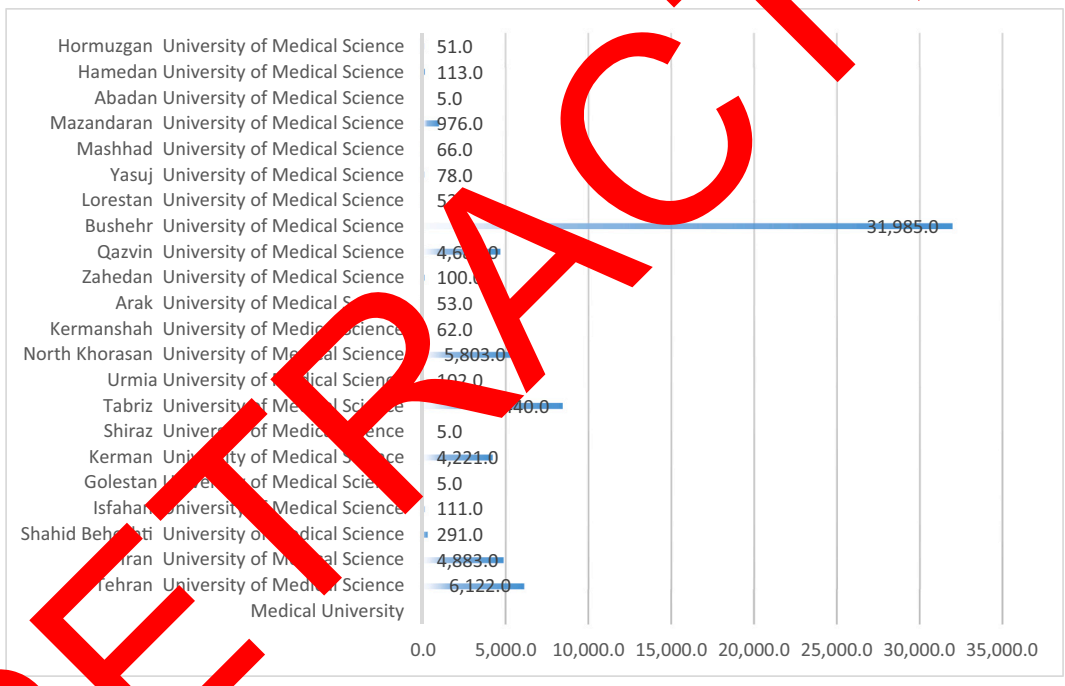

Fig. 2. Identification of 22 websites of Iranian Medical academic Library with the highest number of web citations received from other websites in the web environment (an effective component of Google SEO promotion), real data extracted with AHRF Tools, Oct 10 and 20, 2020.

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academic libraries affiliated with the Ministry of Health and Medical Education, with the exception of Payame Noor and Azad Islamic University, located in Tehran and other metropolitan cities of Iran, which have the highest backlinks or web citations.

According to Fig. 2 and Table 5, Bushehr University of Medical Scince had the highest number of citations received in the web environment, which shows that backlinks, although important SEO factors, but the ranking of sites in Google depends on all SEO items.

Discussion

The providing of access to library content via search engines makes it possible for users to be inform of the accessibility of content when they search by open web search engines such as Google. And given the redundancy of contents on the web, availability goes beyond mere accessibility, it means ranking high on Search Engine Results Pages. SEO techniques do have an effect on the path websites are ranked, as well as the degree to which users are attracted to websites. Also, Iranian medical academic libraries have not been attracting a high number of users to their websites because they have not adopted effective SEO strategies.

The SEO components of Google search engine can be divided into two groups, the first group is the components that can be accessed by website administrator, and the second group are components that can only be measured through the reactions of other websites or the reactions and information behaviors of users of the academic library website or indexing in search engines. With the help of metamorphoses and online SEO analysis tools, you can analyze the SEO components of Google on any website, including the medical academic library website,

Table 5
Comparative evaluation of 22 websites of Iranian medical academic Libraries in terms of the number of backlinks or web citations received from other websites in the web environment, extracted with the "AHRafs" tool, Oct 10 and 20, 2020

No	Title of university of medical science	Number of backlinks
1	Tehran University of Medical Science	6122.0
2	Iran University of Medical Science	4883.0
3	Shahid Beheshti University of Medical Science	291.0
4	Isfahan University of Medical Science	111.0
5	Golestan University of Medical Science	5.0
6	Kerman University of Medical Science	4221.0
7	Shiraz University of Medical Science	5.0
8	Tabriz University of Medical Science	8440.0
9	Urmia University of Medical Science	102.0
10	North Khorasan University of Medical Science	5803.0
11	Kermanshah University of Medical Science	62.0
12	Arak University of Medical Science	53.0
13	Zahedan University of Medical Science	100.0
14	Qazvin University of Medical Science	4682.0
15	Bushehr University of Medical Science	31,985.0
16	Lorestan University of Medical Science	52.0
17	Yasuj University of Medical Science	78.0
18	Mashhad University of Medical Science	66.0
19	Mazandaran University of Medical Science	976.0
20	Abadan University of Medical Science	5.0
21	Hamedan University of Medical Science	113.0
22	Hormuzgan University of Medical Science	51.0

and there is no need for Google Analytics tools, which are only available to the administrator of each website.

In total, the present study has dealt with 35 components affecting SEO in Google's public search engine, of which 31 components, including 30 components presented in the researcher-made checklist, plus 1 component of domain history, can be implemented by [illegible] webmasters and the remaining 4 components cannot be implemented by the webmaster in the content of the library website, but can be measured through the reactions or information behaviors of users or other websites to the library website. From the rate of users bounce from the website, the average duration of users on the website, the number of visits or click-through rate of users of the website the number of indexed pages of the website in Google.

Only 22 of the 68 websites of the Iranian State academic Library, ie about 49%, had the effective component of promoting SEO "digital security certificate or HTTPS protocol", which the mentioned component was easily attainable by the webmaster and is highly emphasized by Google. This component was obtained both in a researcher-made checklist based on the assessment of two online SEO analysis tools and as a mentioned strategy in previous research and documents.

Only 5 websites out of a total of 22 websites of the medical academic Libraries of Iran received 50% points out of a total of 100 in final SEO points, and even SEO points of the top identified websites were less than 74, and none of them had an acceptable score or a score higher than 75. Considering that the SEO score of all Iranian medical academic libraries is less than acceptable score of 75 out of 100, it is worthwhile for university libraries to take a closer look at the components of SEO and management policies in this regard.

Regarding the difference between SEO rules or judgmental components when ranking and retrieving information of user requests in the two general search engines Google and Webby Watson, 3 similarities, 5 differences, 9 attributes were identified for Watson and 42 attributes for Google.

It looks like both Google's public search engine and Web Watson's smart search engine will be present in the future, depending on their applications, and each has its own SEO policies to rank the information retrieved when web users search. So, the findings of the present study are in line with the findings of Askey and Arlitsch (2014), Sajed, Noor Mohammadi, and Asadi (2016), Danaei (2018) and M. Tavusi and Zain Al-Abedini (2018).

Given the mission of libraries to protect the intellectual property rights of information resources, academic libraries should consider the issue of intellectual property while respecting the effective components of SEO or increasing visibility in Google, which makes, compared to other Non-library websites (whose protection of intellectual property is not one of their goals) have a more serious responsibility. On the other hand, if the SEO of any website is not implemented properly by experts, not only will not lead to an increase in the ranking of users' search results, but can lead to the total removal of the website in Google, so the responsibility of the academic library website doubles.

The webmasters of Iranian medical academic libraries should take a closer look at the SEO components to improve visibility of their library in search engines, while observing the SEO components for libraries without having rich and qualitative content from textual, video, video or multimedia sources, will not work. So, training and employing experts in this field for the academic libraries can be effective.

The websites of Iranian medical academic libraries often are under-visited and under-used because few libraries are sufficiently active and strategic in search engine optimization. Library administrators can achieve worth information about their organizations via a good managed SEO program that enhances websites and digital object metadata are comprehensible and usable by search engine crawlers. A lot of free software there are to help troubleshoot problems that search engine crawlers conflict when they try to harvest websites and digital repositories and Web analytics software like Google Analytics can help organizations make course corrections for better service via provide rich data about visitor behavior, and user needs or interests.

And all of this highlights the importance of the role of SEO in the success of digital libraries and library websites, especially about academic libraries whose mission is to make more accessible to information resources the scientific community in the shortest time and with the most relevance and quality.

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